

REMARKS

Applicant has carefully reviewed and considered the Office Action mailed on February 12, 2003, and the references cited therewith.

Claims 21, 24, 31, 38, 40-42, 51, 58 and 60 are amended; as a result, claims 21-25, 27, 31-58 and 60-63 are now pending in this application.

The amendments made herein have been to clarify the claims and are not intended to limit the scope of equivalents to which any claim element may be entitled. The amendments to the claims have support throughout the specification. No new matter has been added as a result. Applicant respectfully requests reconsideration of the above-identified application in view of the amendments above and the remarks that follow.

The claims have been amended to recite treating bran in a wet bleaching process. Claims have also been amended to recite a bleached bran product having a water absorption value higher than native bran. Support for these amendments can be found throughout the specification, including on page 2, line 13 and page 16, lines 17-27.

§112 Rejections of the Claims

35 USC §112, first paragraph

Claims 21-25, 27, 31-57 and 63 were rejected under 35 USC § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant respectfully traverses this rejection.

The Examiner states that neither the added limitation "treating bran derived from a cereal grain with an excess amount of a hydrogen peroxide solution" nor claim 63 has support in the original disclosure.

Applicant states that the specification provides support for the phrase, "an excess of amount of solution," even though the precise word "excess" is not present. The specification states that a *wet bleaching process* is used and further describes properties of the resulting bleached bran product that can exist only after exposure to a *wet bleaching process*, i.e., a

process which utilizes an excess amount of solution. See, for example, page 16, lines 17-21 of the specification, where it states, "The water absorption of the bleached bran is also improved . . . in comparison to unbleached bran. Specifically, the bleaching treatment removes part of the lignocellulosic and hemicellulose material of the cell walls. As a result, the cell wall structure is disrupted with a concomitant increase in the water holding capacity of the treated material." Such changes to the cell wall structure would not occur in a dry environment, i.e., an environment that does not use an excess amount of solution. (See also Devic).

However, in an effort to facilitate prosecution, Applicant has amended the claims to remove reference to "an excess amount."

Reconsideration and withdrawal of this rejection is respectfully requested.

35 USC §112, second paragraph

Claims 21-25, 27 and 31-57 were rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant respectfully traverses this rejection.

The Examiner states that the phrase "an excess amount of a hydrogen peroxide solution" is indefinite because it is not known what will constitute "an excess amount" and that therefore the scope of the claims cannot be determined.

Applicant states that the term "excess" is known to refer to a surplus, i.e., more than is required. Those skilled in the art would understand that, in terms of this process, an excess amount refers to the amount (of solution) beyond the amount absorbable by the material, i.e., not all the solution is absorbable by the material since there is more than is required for absorption. It is immaterial precisely how much excess there is, only that an excess amount is present. As such, this term is not indefinite.

However, in as noted above, in an effort to facilitate prosecution, Applicant has amended the claims to remove reference to "an excess amount."

Reconsideration and withdrawal of this rejection is respectfully requested.

§102 Rejection of the Claims

Claims 38 and 51 were rejected under 35 USC § 102(b) as being anticipated by Devic (U.S. Patent No. 5,480,788).

The Examiner states that Devic discloses a bleached bran product and describes the various treatment steps. The Examiner states that the bleached bran product is obtained by treatment with alkaline aqueous hydrogen peroxide solution and also in the presence of a chelating agent and that, as a result, it is inherent that the product (in Devic) has the same property as claimed. The Examiner further states that, although there is uncertainty in what the term means, the phrase "excess amount" is disclosed by Devic and, as such, is only a difference in a processing step that does not determine the patentability of the product.

Applicant traverses the above assertions and again points out that Devic clearly does not use an excess amount of solution in its process, and, as a result, produces a product that is very different than Applicant's product. Devic's reference to "soaking" is limited by the statement that the soaking must be *complete*, namely, all of the alkaline solution must be absorbed by the material *and no aqueous phase must remain in contact with the plant material.*" (col. 3, lines 57-60). Applicant not only has no such limitation in the specification, the unique properties of Applicant's bleached product are consistent only with a wet bleaching process (use of excess solution) and not with a dry bleaching process as in Devic.

Again, Devic discusses a process of bleaching plant materials under a *dry* environment in the solid state (col. 4, lines 40-45; col. 5, line 61 through col. 6, line 2), without an apparent liquid phase (col. 3, lines 2-3), using an alkaline aqueous hydrogen peroxide solution, such that *all of the solution is absorbed* by the plant material *without establishing any liquid phase in contact therewith*. Furthermore, as a result of the *complete soaking* as defined in Devic and noted above, the *bleaching is conducted "at the surface of the fibers*, the materials to be treated not being wetted by the aqueous phase." (col. 5, line 67 through col. 6, line 2).

In contrast, claim 38, as amended, recites a bleached bran product comprising bleached bran derived from a cereal grain, the bleached bran product produced by treating bran with a hydrogen peroxide solution and an aqueous alkaline solution in a wet bleaching process, the bleached bran product having a water absorption value higher than native bran and an antioxidant activity at least 15 to 35% higher than native bran, the bleached bran product suitable

for use as an additive in foods. Additionally, Claim 51, as amended, recites a bleached bran product comprising bleached bran derived from a cereal grain, the bleached bran product produced by first treating bran with a chelating agent to produce reduced transition metal content bran, the reduced transition metal content bran further treated with a hydrogen peroxide solution and an aqueous alkaline solution in a wet bleaching process, the bleached bran product having a water absorption value higher than native bran and an antioxidant activity at least 15 to 35% higher than native bran.

Devic does not teach each element of claims 38 and 51 because it does not teach a product treated with a hydrogen peroxide solution and an aqueous alkaline solution in a wet bleaching process, the bleached bran product having a water absorption value higher than native bran.

Devic does not anticipate the claims, as amended. Applicant respectfully submits that claims 38 and 51 are allowable in their present form and notification to that effect is respectfully requested.

§103 Rejection of the Claims

Claims 21-25, 27, 31-58 and 60-63 were rejected under 35 USC § 103(a) as being unpatentable over Devic (U.S. Patent No. 5,480,788) in view of Ramaswamy (U.S. Patent No. 5,023,103).

The Examiner admits that Devic does not disclose the L value, "the" properties, adding bran to the type of foods claimed, the particle size and use of ozone. The Examiner states that the new limitation of "an excess amount" does not define over the prior art. The Examiner also states that Ramaswamy teaches that ozone is a known bleaching agent and that it would have been obvious to vary the treatment (in Devic) to obtain a bleached product having varying degrees of whiteness. The Examiner further states that Devic teaches that the amount of hydrogen peroxide can vary from 1-20% depending on the desired degree of whiteness and that one can vary the degree of whiteness depending on the intended use of product, giving examples. The Examiner further states that it would have been obvious to add the bleached bran product to any foods when it is desirable to increase the fiber content of the products. The Examiner further states that since the Devic bleached bran product is obtained by treating with alkaline aqueous

hydrogen peroxide solution, it will have the properties as claimed including water absorption value, reduced native flavor components and increased antioxidant activity and that it would have been obvious to use other known bleaching agents. The Examiner continues by stating that Ramaswamy discloses ozone is a known bleaching agent. The Examiner further states that in an absence of showing of unexpected results, it would have been obvious to use any "other" known chelating agents.

Applicant respectfully submits that the Examiner has not established the *prima facie* obviousness of the present claims. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the cited references themselves or in the knowledge generally available to an art worker, to modify the reference or to combine reference teachings so as to arrive at the claimed invention. Second, the art must provide a reasonable expectation of success. Finally, the prior art reference must teach or suggest all the claim limitations. In re Ochiai, 37 USPQ2d 1127 (Fed. Cir. 1997) (When evaluating the scope of a claim, every limitation in the claim must be considered).

Applicant further notes that claims 22-25, 27, 43-50 and 63 are dependent on claim 21; claims 32-37 are dependent on claim 31; claim 39 is dependent on claim 38; claims 52-57 are dependent on claim 51 and claims 61-62 are dependent on claim 60. The additional limitations provided in dependent claims cannot by themselves be rendered obvious over the cited references if the independent claim from which it depends is determined to be nonobvious.

Applicant again traverses the assertions and conclusions drawn by the Examiner. Devic does not teach or suggest the claimed invention. As noted above, Devic discusses a process of bleaching plant materials under a dry environment in the solid state (col. 4, lines 40-45; col. 5, line 61 through col. 6, line 2) using an alkaline aqueous hydrogen peroxide solution, such that all of the solution is absorbed by the plant material without establishing any liquid phase in contact therewith (claim 1). Admittedly, the dry treatment in Devic allows bleaching to only be conducted "at the surface of the fibers, the materials to be treated not being wetted by the aqueous phase" (col. 5, line 67 through col. 6, line 2) and so produces a product having different properties than a product produced with a wet bleaching process.

In contrast, claim 21, as amended, recites a bleached bran product comprising bleached bran derived from a cereal grain, the bleached bran product produced by treating bran with a

hydrogen peroxide solution and an aqueous alkaline solution in a wet bleaching process, the bleached bran product having a water absorption value higher than native bran and an antioxidant activity at least 15 to 35% higher than native bran and suitable for admixing with whole wheat flour to produce white whole wheat flour having an L value on the Hunter scale of at least about 82. Claim 31, as amended, recites a whole wheat flour comprising a bleached bran product produced by treating bran derived from a cereal grain with a hydrogen peroxide solution and an aqueous alkaline solution in a wet bleaching process, the bleached bran product having a water absorption value higher than native bran and an antioxidant activity at least 15 to 35% higher than native bran, the whole wheat flour having an L value on the Hunter scale of at least about 82 and a dietary fiber content of about 10 to 12%. Claim 38, as amended, recites a bleached bran product comprising bleached bran derived from a cereal grain, the bleached bran product produced by treating bran with a hydrogen peroxide solution and an aqueous alkaline solution in a wet bleaching process, the bleached bran product having a water absorption value higher than native bran and an antioxidant activity at least 15 to 35% higher than native bran, the bleached bran product suitable for use as an additive in foods. Claim 36 recites a finished baked good prepared from the whole wheat flour of claim 31. Similarly, claim 40, as amended, recites a refrigerated uncooked or bakeable dough product; claim 41, as amended, recites a ready-to-eat cereal; and claim 42, as amended, recites a cooked cereal dough comprising bleached bran, the bleached bran produced (in claims 40-42) by treating bran with a hydrogen peroxide solution and an aqueous alkaline solution in a wet bleaching process, the bleached bran having a water absorption value higher than native bran and an antioxidant activity at least 15 to 35% higher than native bran. Claim 51, as amended, recites a bleached bran product comprising bleached bran derived from a cereal grain, the bleached bran product produced by first treating bran with a chelating agent to produce reduced transition metal content bran, the reduced transition metal content bran further treated with a hydrogen peroxide solution and an aqueous alkaline solution in a wet bleaching process, the bleached bran product having a water absorption value higher than native bran and an antioxidant activity at least 15 to 35% higher than native bran. Claim 58, as amended, recites a bleached bran product comprising bran derived from a cereal grain, the bran bleached in a wet bleaching process with a combination of hydrogen peroxide and ozone or peracetic acid in the presence of heat to produce the bleached bran product. Claim 60, as

amended, recites a bleached bran product comprising bleached bran derived from a cereal grain, the bleached bran product produced by treating bran with a hydrogen peroxide solution and an aqueous alkaline solution in a wet bleaching process, followed by an ozone treatment, the bleached bran product having an antioxidant activity at least 15 to 35% higher than native bran and suitable for admixing with whole wheat flour to produce white whole wheat flour having an L value on the Hunter scale of at least about 82.

Devic clearly recognizes the difference between a dry bleaching process (which allows the bleaching to be conducted only at the surface) and a wet bleaching process (which will inherently affect the cell walls) as well as the differences in resulting product properties when performing a dry bleaching process. In fact, Devic teaches away from a wet bleaching process since Devic believes that processes carried out in an aqueous medium, i.e., in a manner that the plant materials are completely wet, present a number of "disadvantages." (col. 1, lines 62-64). According to Devic, these disadvantages include, for example, the belief that processes carried out in an aqueous medium lead to formation of viscous pastes that are very difficult to stir and manipulate, causing the bleaching medium to be highly diluted (col. 1, line 64 through col. 2, line 2). Devic also believes that the increased volume and weight of dietary fibers in an aqueous medium, due to water retention capacity of the fibers, reduces productivity of the processing apparatus. (col. 1, lines 62-64, col. 2, lines 3-6). Devic also believes that diffusion of the reactants into the dietary fibers during a wet bleaching treatment requires a lengthy period of time and necessitates either high-performance and expensive-stirrers/mixers, or long reaction times in a highly diluted medium with traditional stirring (col. 2, lines 7-11). Devic also states that heating energy is saved when a process is carried out in a dry environment and the apparatus used for the bleaching process can be simpler (treatment of dry materials) and has a higher productivity (col. 6, lines 3-7). Devic also believes such dry conditions are necessary to eliminate residual peroxides (col. 2, lines 33-34). And, as noted above, Devic further states that degradation of the plant material is reduced in a dry environment (col. 5, lines 64-67) because the bleaching is conducted only at the surface of the fibers.

Applicant notes that while a court must ascertain the differences between a claimed invention and the prior art, it is not proper to focus on the question of whether any particular difference or differences would have been obvious. Rather, 35 USC 103 requires that the

invention be considered "as a whole." Furthermore, a prior-art reference must be considered in its entirety, including portions that teach away from the claimed invention. The fact that a reference teaches away from a claimed invention is highly probative that the reference would not have rendered the claimed invention obvious to one of ordinary skill in the art. Stranco Inc. v. Atlantes Chemical Systems, Inc., 15 USPQ2d 1704, 1713 (Tex. 1990).

Ramaswamy does not overcome the deficiencies of the primary reference. Ramaswamy discusses a white water absorbent fiber made from a waste product, i.e., oat hulls, having a high percentage of total dietary fiber and hemicellulose and a low concentration of lignin and silica. The primary process in Ramaswamy involves an alkaline digestion of ground oat hulls, with the bleaching step being optional.

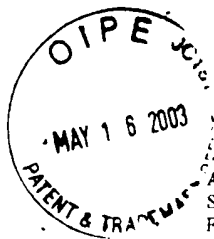
It is not clear that the primary and secondary references are even in the same field of endeavor. At a minimum, the product in the primary reference and the product in the secondary reference are fundamentally different from each other and such critical differences must be recognized. In re Bond, 910 F.2d 831, 834, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990), *reh'g denied*, 1990 U.S. App. LEXIS 19971 (Fed. Cir. 1990).

Furthermore, there is no suggestion in *Devic as to the desirability* of using ozone, nor is there any indication of any appreciation of the problem being solved by Applicant's invention. It is not even clear that the prior art can be modified as suggested, but the mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. Uniroyal Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988). Applicant requests the Examiner to either provide evidence of such motivation or withdraw this rejection. See also In re Sang Su Lee, No. 00-1158 (Serial No. 07/631,240), (Fed. Cir.), decided January 18, 2002 (copy previously provided).

Applicant is not claiming to be the first to use ozone as a bleaching agent. Applicant is the first, however, to provide a bleached bran product comprising bran derived from a cereal grain, the bran bleached in a wet bleaching process with a combination of hydrogen peroxide and ozone or peracetic acid in the presence of heat to produce the bleached bran product, as recited in claim 58, as amended. Applicant is also the first to provide a bleached bran product comprising bleached bran derived from a cereal grain, the bleached bran product produced by treating bran

with a hydrogen peroxide solution and an aqueous alkaline solution in a wet bleaching process, followed by an ozone treatment, the bleached bran product having an antioxidant activity at least 15 to 35% higher than native bran and suitable for admixing with whole wheat flour to produce white whole wheat flour having an L value on the Hunter scale of at least about 82, as recited in claim 60, as amended.

In any case, the suggested combination does not teach each and every element of Applicant's claims. The references neither independently, or combined, contain each and every element of Applicant's claimed invention. Applicant respectfully submits that independent claims 21, 31, 36, 38, 40-42, 51, 58 and 60, and the claims that depend from them, are patentably distinct from the cited references, either alone or in combination. The claims, as amended, each viewed as a whole, are not suggested by the cited references and not obvious under 35 USC § 103(a). Reconsideration and withdrawal of this rejection is respectfully requested.



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AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

Serial Number: 09/663914

Filing Date: September 18, 2000

Title: BLEACHED BRAN AND BRAN PRODUCTS AND METHODS OF PREPARATION

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (515) 233-3865 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on this 12th day of May, 2003.

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Signature